

SPECIFICATION

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REFRIGERATION CASE CLIP ASSEMBLY METHOD AND APPARATUS

Background of Invention

- [0001] This invention relates generally to refrigeration appliances, and, more particularly to, an apparatus and method for constructing refrigeration appliance cabinets.
- [0002] Known refrigeration appliances, such as refrigerators, include a cabinet housing including an outer case and one or more inner liners therein that defines a fresh food compartment and a freezer compartment. The fresh food compartment and freezer compartments are closed by separate access doors hingedly attached to the case. A mullion extends across the front of a partition that separates the fresh food and freezer compartments in the liner and is attached to the outer case to reinforce the front of the outer case and preserve a pleasing aesthetic appearance of the refrigerator. Typically, the casing is fabricated from relatively thin sheet metal and includes a U-shaped shell to which a back and a bottom panel are attached to form an enclosure that contains the liner. A resin foam insulation medium is interposed between the casing and a plastic liner to insulate the refrigeration compartments of the refrigerator and also to increase structural rigidity and strength of the refrigerator cabinet. See for example, U.S. Patent Nos. 4,822,117 and 4,632,470. A lower rail extends across the bottom of the cabinet and includes a grille providing access to a machinery compartment in the bottom of the refrigerator compartment.
- [0003] While for some time refrigerator liners were installed into cabinets that were pre-fabricated with the foam, recent manufacturing efforts have been directed to foaming refrigerator cabinets after the liners have been inserted into the *casing shell*, a practice which has been found to reduce undesirable liner stress and associated cracking of the

liner in use.

- [0004] However, foaming of the cabinets after insertion of liners has proven problematic in other aspects. For example, once the liner is installed into the casing shell, access is severely restricted to attach the casing bottom panel to the shell, and conventional automated equipment to install the casing bottom panel cannot be used. While tooling and fixtures to install the casing bottom panel to the cabinet before foaming operations may be found, they may be employed only with increased manufacturing and assembly costs. In addition, difficulties in securing the casing bottom panel to the shell tend to result in undesirable foam leaks in foaming operations, especially in an area where the casing bottom panel is attached to the lower rail at the bottom of the refrigerator

Summary of Invention

- [0005] In one aspect, a refrigeration appliance cabinet is provided that comprises a bottom mullion and a casing. One of said bottom mullion and said casing comprises a retaining tongue and the other of said bottom mullion comprises an engagement surface for being received in said tongue.
- [0006] In another aspect, a refrigerator cabinet is provided which comprises a bottom mullion, and a casing in press fit engagement with said bottom panel.
- [0007] In a further aspect, a refrigerator cabinet is provided. The cabinet comprises a casing, an inner liner within said casing and said inner liner comprising at least one refrigeration compartment. A bottom mullion is configured to receive a portion of said inner liner, and said casing is configured to receive a portion of said bottom mullion with press fit engagement.
- [0008] In still another aspect, a method for fabricating a refrigeration appliance cabinet is provided. The refrigerator cabinet includes a casing shell, an inner liner, a casing bottom panel, and a bottom mullion. The method comprises attaching the bottom mullion to the casing shell by hand, inserting the inner liner into the casing shell, attaching the casing bottom panel to the bottom mullion by hand, and injecting a foam insulation medium between the casing and the inner liner.
- [0009] In yet another aspect, a method for fabricating a refrigerator cabinet is provided. The cabinet includes a casing shell, an inner liner, a casing bottom panel, and a bottom

mullion including opposite side surfaces, each of the side surfaces including a channel. The method comprises inserting the inner liner into the casing shell, press fitting the bottom mullion to the inner liner such that the inner liner is received in one of the bottom mullion channels, press fitting the casing bottom panel to the bottom mullion, and injecting a foam insulation medium between the casing and the inner liner.

- [0010] In still a further aspect, a method for fabricating a refrigerator cabinet is provided. The cabinet includes a casing shell, an inner liner, a casing bottom panel including a retaining tongue extending therefrom, and a bottom mullion including opposite side surfaces, each of the side surfaces including a channel. The method comprises inserting the inner liner into the casing shell, press fitting the lower rail to the bottom mullion such that the lower rail is received in one of the bottom mullion channels, press fitting the bottom mullion to the inner liner such that the inner liner is received in one of the bottom mullion channels, press fitting the casing bottom panel to the bottom mullion such the retaining tongue engages the bottom mullion, and injecting a foam insulation medium between the casing and the inner liner.

Brief Description of Drawings

- [0011] Figure 1 is front elevational view partly broken away of an exemplary refrigerator according to the present invention.
- [0012] Figure 2 is a partial exploded perspective view of the refrigerator shown in Figure 1.
- [0013] Figure 3 is a cross sectional view of a bottom mullion for the refrigerator shown in Figures 1 and 2.
- [0014] Figure 4 is a partial cross sectional view of a casing bottom panel for the refrigerator shown in Figures 1 and 2.
- [0015] Figure 5 is a schematic cross sectional view of a portion of the refrigerator shown in Figures 1 and 2.

Detailed Description

- [0016] Figure 1 is front elevational view partly broken away of an exemplary refrigeration appliance 90 according to the present invention. In an illustrative *embodiment*, refrigeration appliance 90 is a top-mount refrigerator including a cabinet 100 that